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Survey to Assess Status of Hepatitis B Tracking Policies and Reinstitution of Birth Dose of Hepatitis B Vaccine in Missouri Obstetrical Hospitals - 2000

Ruby McPherson
Section of Vaccine-Preventable and Tuberculosis Disease Elimination

Case Study[1]

On December 13, 1999, a previously healthy 3-month-old infant of Southeast Asian descent was brought to a local Michigan hospital emergency department and was admitted following a five-day history of fever, diarrhea, and jaundice.

Upon admission to the hospital, hepatitis B serology was obtained along with liver function tests and liver enzymes. Laboratory results revealed that the infant was hepatitis B surface antigen (HBsAg) positive and IgM core antibody positive with elevated liver enzymes. The infant's test results were reported to the local health department on December 14, 1999. The infant's mother was tested at the same time and was found to be HBsAg positive and anti-HBc positive.

A diagnosis of hepatic failure due to hepatitis B virus (HBV) infection was made and the infant was transferred to another hospital on December 16 for possible liver transplantation. After transfer, the infant developed seizures and her condition deteriorated rapidly. She died on December 17.

The hospital where the infant was born had suspended administration of hepatitis B (HB) vaccine to all newborns during the summer of 1999 due to the concern about the presence of thimerosal used as a preservative in HB vaccine. This policy, in addition to several recording and reporting errors of the mother's positive HBsAg test led to this infant missing its birth dose of HB vaccine and hepatitis B immunoglobulin (HBIG). The infant received its first dose of vaccine at 2 months of age; however, for the vaccine to prevent transmission of the HBV, it must be received at birth.

Survey of Missouri Obstetrical Hospitals

Now that thimerosal-free vaccine is available, the Missouri Department of Health, Section of Vaccine-Preventable and Tuberculosis Disease Elimination conducted a survey of birthing hospitals in Missouri to assess the status of hepatitis B tracking policies and reinstituting the birth dose of HB vaccine. A survey tool was developed and mailed to Missouri's 93 birthing hospitals. Six hospitals had closed their obstetrical units. Forty-one out of the 87 (47%) remaining hospitals responded to the survey. The results of those 41 survey responses are summarized below.

Thirty-eight (93%) of the hospitals have a policy for ensuring the HBsAg status is known for all pregnant women prior to or at the time of delivery. Three (7%) of the hospitals had no policy for ensuring the pregnant woman's HBsAg status. Thirty-one (76%) of the hospitals have a policy for ordering the HBsAg test for expectant mothers upon admission if her status is unknown. Ten (24%) of the hospitals have no policy for ordering the HBsAg test.

Record-keeping procedures were also questioned in the survey. Thirty-six (88%) of the birthing hospitals ensure the mother's HBsAg status is recorded in the infant's chart. Five (12%) do not ensure the mother's HBsAg status is in the infant's chart.

Thirty-two (78%) have a policy to offer HB vaccine to all infants prior to discharge, regardless of the HBsAg

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status of the mother. Nine (22%) have no policy to vaccinate newborns. Thirty-three (80%) of the hospitals have a treatment policy for infants born to mothers whose HBsAg status is not known at the time of delivery. Eight (20%) of the hospitals have no treatment policy for those infants.

Discussion

On average, 19,000 pregnant women in the United States are chronically infected with HBV, and Missouri is estimated to have 127 HBsAg-positive pregnant women each year. A pregnant woman who is an HBV carrier can pass the infection on to her newborn baby at birth. Eighty-five to 90 percent of babies infected at birth will become carriers or chronically infected reducing their life expectancy. Twenty-five to 50 percent of children under the age of 5 infected with HBV are unable to clear the virus from their bodies within six months, and are considered to be chronically infected. The HB vaccine provides immunity in over 95 percent of recipients.

To prevent perinatal HBV transmission, infants born to mothers who are infected with HBV need to receive:

1) The appropriate first dose of HB vaccine within 12 hours of birth, along with HBIG;
2) The remaining appropriate doses of HB vaccine at 1–2 months and 6 months of age; and
3) Post vaccination serologic testing by 12–15 months of age to ensure they are not infected and have developed immunity to HBV.

In order to achieve these objectives for perinatal HBV infections, the following should be implemented:

- Assure all pregnant women are screened for HBsAg, which indicates the mother is infected with HBV, during her first trimester in **EACH** pregnancy. Laboratories and health care providers are required to report HBsAg-positive pregnant women to their local public health agency or the Missouri Department of Health.
- Assure all infants of HBsAg-positive mothers receive HBIG at birth and three doses of HB vaccine by 6 months of age.

In national surveys conducted from 1993–1995, 85–93 percent of identified infants of HBsAg-positive mothers received HBIG and HB vaccine at birth; however, only 62–69 percent completed the HB vaccination series by 6–8 months of age. Supervised case management has been found to be a key element to assure high levels of completion of post-exposure prophylaxis.

The publication of the joint statement on thimerosal by the American Academy of Pediatrics and the U.S. Public Health Service (July 1999) resulted in a major reduction in the administration of the HB vaccine birth dose in hospitals. Now that thimerosal-free vaccine is available, resumption of HB vaccination at birth is important because confusion about recommendations, tracking, and reporting errors has resulted in some hospitals failing to immunize infants delivered to HBsAg-positive women. According to our survey, only 78 percent of Missouri's hospitals are even offering HB vaccine to newborns. The Centers for Disease Control and Prevention has reported that infants receiving HB vaccine at birth are more likely to complete the HB series than infants who do not receive a birth dose.

Missouri has a high rate of hospitals with policies for screening pregnant women and recording this information in the infant's chart; but Missouri still under-reports HBsAg prenatal cases by an estimated 27 percent. Since approximately 12–25 percent of Missouri's hospitals have no policies for screening pregnant women, recording the mother's HBsAg status, or vaccination of newborns, hepatitis B cases will be missed.

As illustrated in the case study, reinstituting the birth dose of HB vaccine can provide a lifesaving safety net. Activities to reinstitute the birth dose of HB vaccine are continuing. Information was mailed in August to all Missouri birthing hospitals and physicians stressing the importance of administering HB vaccine at birth using the preservative-free HB vaccine. The mother's hepatitis B screening results and HBIG should be added to all newborns' vital records to ensure reporting.

We are providing on pages 3–4 answers to the most frequently asked questions regarding reporting and preventing perinatal hepatitis B.

If you have additional questions regarding the hospital survey or use of HB vaccine, please contact Ruby McPherson in the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

REFERENCE:

1. Fasano N. Unprotected people... Infant dies of fulminant hepatitis B, 1999. Needle Tips and the Hepatitis B Coalition News 2000;10(1):12.

Disease Reporting

Cases of reportable diseases and conditions should be reported promptly to your local health department, or to the Missouri Department of Health at

(800) 392-0272
(during working hours).
The emergency number is
(573) 751-4674
(for after hours, weekends or holidays).

Frequently Asked Questions Regarding Perinatal Hepatitis B

The following are questions frequently asked by healthcare providers and laboratory personnel regarding reporting and preventing perinatal hepatitis B.

Who reports hepatitis B surface antigen (HBsAg) positive pregnant women?

Reports of HBsAg-positive pregnant women come from a variety of sources: laboratories, prenatal care providers, delivery hospitals and local public health agencies.

How do I know which babies need hepatitis B immune globulin (HBIG) and hepatitis B vaccine?

Serologic testing of all pregnant women for HBsAg is essential for identifying infants who require HBIG and hepatitis B vaccine. All pregnant women in Missouri are recommended by law to be serologically screened for hepatitis B virus (HBV), at their first prenatal visit.

How do you get household and sexual contacts tested?

Hepatitis B testing and vaccine are available from the Missouri Department of Health for household, needle-sharing, and sexual contacts of HBsAg-positive, pregnant women. If any marker of the HBV serology is positive, the contact is not a candidate for hepatitis B vaccine. If, however, the contact's HBV serology is negative for hepatitis B markers; they should receive hepatitis B vaccine.

If a contact of an HBsAg-positive mother has had hepatitis B vaccine, should they be tested?

Yes. Any contact of an HBsAg-positive mother should be tested. For children in the household who received the hepatitis B vaccine series as part of routine childhood immunizations, testing for HBsAg and anti-HBs is appropriate. Infants born to HBsAg-positive mothers previously enrolled in perinatal services, and who were previously tested after receiving the hepatitis B vaccine series, need not be retested.

Why is it important to do post-vaccination testing on infants born to HBsAg-positive mothers?

Serologic testing will determine whether the infant responded appropriately to the vaccine. If the baby did not acquire immunity to hepatitis B, he/she must be revaccinated.

How do you get HBIG and hepatitis B vaccine for the infant and contacts? How is it paid for?

Orders for HBIG and hepatitis B vaccine can be placed by your local public health agency. Hepatitis B vaccine and HBIG are provided free of charge by the Missouri Department of Health.

What happens if the mother and infant are discharged from the hospital before test results are available and before the infant receives appropriate prophylaxis?

The infant should receive the first dose of hepatitis B vaccine within 12 hours of birth, regardless of mother's HBsAg status. If the mother is later determined to be HBsAg-positive, the infant should receive HBIG, but no later than seven days after birth. The vaccine series should then be completed as scheduled.

When should the perinatal hepatitis B report forms be sent to the Missouri Department of Health, Section of Vaccine-Preventable and Tuberculosis Disease Elimination?

- Mother's summary report — within 15 days of initial report
- Infant summary report — within 15 days of birth, after each hepatitis B vaccine dose **and** when post-vaccine serology test results are available
- Contact summary report — within 15 days of initial report when their anti-HBc test results are available **and** after each hepatitis B vaccine dose

Diagnostic Tests for HBV Antigens and Antibodies

Marker	Abbreviation	Definition
Hepatitis B surface antigen	HBsAg	Shows acute or chronic infection; if detected longer than six months defines a carrier.
M class immunoglobulin antibody to hepatitis B core antigen	Anti-HBc IgM	Shows acute/recent infection with HBV detectable for four to six months.
Antibody to hepatitis B core antigen	Anti-HBc	Shows current acute infection or on-going chronic infection or previous resolved infection.
Antibody to hepatitis B surface antigen	Anti-HBs*	Shows past infection with HBV or vaccination for HBV. Indicates immunity to HBV.

*Anti-HBs levels wane over time and may fall to a non-detectable level. Subsequent exposures to HBV may also cause rises in the level of HBs antibody.

If you have additional questions regarding perinatal hepatitis B, please contact:

Missouri Department of Health
Section of Vaccine-Preventable and Tuberculosis Disease Elimination
Ph: (573) 751-6133
or (800) 699-2313

What is MATEC-Missouri (Mid-West AIDS Training and Education Centers for Missouri)?

Kay Williams, B.S.N., M.P.H., C.I.C.
Project Coordinator
MATEC-Missouri

Overview

The AIDS Education and Training Centers (AETC) is a national network of programs that collaborate with local community-based health care clinics and centers to ensure that HIV/AIDS care providers have access to a wide range of treatment information. The regional AETC are supported by the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act. Missouri is one of six mid-western states receiving HIV/AIDS Bureau of the Health Resources and Services Administration (HRSA) funding. MATEC-Missouri is hosted by Washington University School of Medicine in St. Louis, Missouri.

MATEC-Missouri offers specialized clinical education and consultation covering essential up-to-date information on the transmission, treatment, and prevention of HIV/AIDS. The education is provided in a variety of formats including workshops, hands-on supervised clinical training and conferences providing continuing education. The education programs are designed for the needs of physicians, dentists, nurse practitioners, pharmacists, physician assistants and nurses caring for persons with HIV/AIDS. Medical faculty also provide timely clinical consultation in person, via the telephone or via the Internet. Knowledge of the disease and its treatment has increased exponentially, as has the need for dissemination of new information.

Training for clinicians and clinics is designed following an assessment of local needs. This effort is directed to clinics and centers serving under-served and hard-to-reach populations. One goal of HRSA and MATEC is to assure that the quality of emerging HIV/AIDS treatments makes a difference in the lives of people living with this disease. Therefore, special emphasis is placed on training Ryan White funded providers and those who are located in community-based organizations including rural health care facilities, community and migrant health centers, public health clinics, correctional facilities and other nonprofit organizations. Another goal is to provide quality educational programs around HIV/AIDS. The MATEC Individualized Clinician Training Program is designed to meet a unique set of characteristics and needs related to the dynamic nature of the AIDS epidemic in under-served communities—ranging from highly impacted urban areas to outlying rural areas with inadequate access to providers.

How to Take Advantage of These Training Opportunities

Individual clinicians and clinics nominate themselves for the program, or can be nominated by the community they serve. Once identified, nominees will be contacted by MATEC for an interview prior to acceptance into the program.

Benefits and Responsibilities

Upon acceptance into the program, each participant or clinic will meet with a member of MATEC's experienced training staff to develop an individualized training plan for the year, based upon each person's or clinic's experience and interests. Participants will receive scholarships to allow attendance at all of the MATEC programs offered in the six-state region (Missouri, Illinois, Indiana, Wisconsin, Minnesota, and Iowa) during the training program period. Typical training programs offered may include the physician and multidisciplinary clinical preceptor program, clinical management seminars, skill-building workshops and special conferences that are held during the year. During the individualized training, each participant will be placed with experienced clinicians for on-site preceptorships at one of MATEC's many clinical affiliate sites and will be connected to expert providers for consultation during and after their training program year.

Participants will also have access to the MATEC-Missouri resource center and can loan out materials during their fellowship period. Participants may elect to be involved in the training planning process by serving on the MATEC Training Advisory Council, which meets in Chicago twice a year.

For more information about MATEC-Missouri training opportunities, please contact:

Kay Williams
MATEC-Missouri
Washington University School of Medicine
Campus Box 8134
660 S. Euclid
St. Louis, MO 63110
Ph: (314) 362-2418 or (800) 432-0448
Email: williamk@psychiatry.wustl.edu

You can also find additional information about MATEC by visiting their web site at **http://www.uic.edu/depts/matec/**.

St. Louis STD/HIV Prevention Training Center Course Schedule

http://www.stdhivpreventiontraining.org

The St. Louis STD/HIV Prevention Training Center is located on the campus of Washington University School of Medicine, one of the top medical schools in the nation. As part of this prestigious institution, and in conjunction with the local health departments, the PT Center strives to provide students with cutting-edge information and research in the field of STD.

The St. Louis STD/HIV Prevention Training Center offers continuing education courses for health care providers throughout Region VII of the U.S. Public Health Service (Iowa, Kansas, Missouri, Nebraska). The Center is funded by a grant from the federal Centers for Disease Control and Prevention to the St. Louis County Department of Health. Partners in training include Washington University, St. Louis University, University of Missouri-St. Louis, the City of St. Louis Department of Health and Hospitals, Creighton University School of Medicine, and the Douglas County Health Department.

Training Sites:

Missouri: Columbia, Kansas City, Portageville, Rolla, St. Louis
Nebraska: Kearney, Lincoln, Norfolk, Omaha, Scottsbluff

Target Audience:

Health care professionals in public or private settings who provide clinical services to persons with STDs. Physicians, nurse practitioners, and physician assistants will find courses tailored to their level of expertise.

CME Accreditation:

The St. Louis STD/HIV Prevention Training Center is accredited by the Missouri State Medical Association to sponsor continuing medical education for physicians.

CEU Accreditation:

Barnes College of Nursing at the University of Missouri-St. Louis is approved as a provider of continuing education in nursing by the Missouri Nurses Association, which is accredited to approve continuing education in nursing by the American Nurses Credentialing Center's Commission on Accreditation.

For further information or to register for courses, contact:

Delores (Dodie) Rother, MPH
St. Louis STD/HIV Prevention Training Center
Washington University School of Medicine
660 South Euclid Avenue
Campus Box 8051
St. Louis, MO 63110
Ph: (314) 747-0294 or 747-1522
Email: std/hiv@im.wustl.edu
Web site: http://www.stdhivpreventiontraining.org

Viral STD Update

This course is a comprehensive study of the diagnosis, management and treatment of the most common viral STDs (other than HIV). Topics include herpes simplex virus (HSV), human papillomavirus (HPV) and hepatitis, A, B and C. This course includes six hours of didactic sessions and eight hours of supervised clinical practicum.

Course Dates: March 8 & 15, 2001
Course Time: 8:00 am–11:30 am
Course Fee: $40.00
14 hours category 1 CME
16.8 Contact hours

STD Clinician

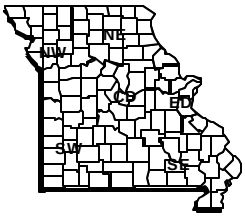
This course, an intensive overview of STDs, includes 18 hours of lecture, two hours of case discussion and 24 hours of supervised clinical practicum.

Course Dates: March 22, 29, April 5, 12, 19 & 26 , 2001
Course Time: 8:00 am–12:00 pm
Course Fee: $90.00
44 hours category 1 CME
52.8 Contact hours

STD Update

This course provides up-to-date information on sexually transmitted diseases including recommendations from the Centers for Disease Control and Prevention 1998 STD Treatment Guidelines. This course includes nine hours of lecture and 16 hours of supervised clinical practicum.

Course Dates: May 3, 10 & 17, 2001
Course Time: 8:00 am–11:30 am
Course Fee: $65.00
25 hours category 1 CME
30.0 Contact hours



Missouri Department of Health
Division of Environmental Health and Communicable Disease Prevention

QUARTERLY DISEASE OCCURRENCE BY REGION AND TIME PERIOD

Reporting Period*
July - September 2000

	Districts											3 Month State Totals		Cumulative January-September		
	CD	** ED	NE	** NW	SE	** SW	*** OTHER	Kansas City	St. Louis City	St. Louis Co.	Spfd. Greene Co.	2000	1999	For 2000	For 1999	5 YR MEDIAN
Vaccine Preventable																
Influenza	1	0	0	0	2	0	0	0	0	0	0	3	3	2417	938	302
Measles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Mumps	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1	3
Pertussis	5	1	1	2	0	3	2	6	11	4	1	36	39	67	54	42
Viral Hepatitis																
A	1	2	0	0	1	20	1	7	2	4	1	39	143	287	360	863
B	2	2	1	2	0	8	2	4	6	5	4	36	30	360	111	220
C	1	0	2	0	2	0	0	0	1	0	0	6	5	16	7	na
Non-A Non-B	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	18
Unspecified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Meningitis																
Meningococcal Disease	0	3	0	1	0	0	1	1	1	0	0	7	9	24	35	36
Meningococcal Other	1	0	0	1	0	0	0	0	2	2	1	7	7	41	33	27
Enteric Infections																
Campylobacter	41	15	12	26	21	38	6	14	9	28	16	226	188	478	443	444
E. Coli O157:H7	4	10	2	8	5	7	0	3	0	13	1	53	22	89	35	37
Salmonella	33	17	5	24	32	22	5	19	14	43	8	222	250	535	560	441
Shigella	4	3	0	35	8	1	6	75	34	27	4	197	197	545	593	312
Parasitic Infections																
Cryptosporidiosis	3	1	0	0	2	1	0	2	3	2	1	15	13	23	20	22
Giardiasis	34	21	3	22	25	14	7	10	40	54	10	240	206	557	502	10
Respiratory Diseases																
Legionellosis	0	2	0	1	1	0	1	0	3	4	0	12	5	23	16	13
Sexually Transmitted																
AIDS	6	3	2	5	3	3	4	12	15	3	2	58	116	282	311	145
HIV Infection	6	4	6	4	5	6	0	15	14	14	5	79	106	215	323	n/a
Chlamydia	265	113	92	144	171	148		810	420	619	101	2883	3085	9521	10044	3085
Gonorrhea	107	32	29	24	77	43		737	495	485	40	2069	2059	6090	5609	2117
P & S syphilis	1	0	0	0	0	0		0	2	1	0	4	16	26	66	40
Tuberculosis																
TB Disease	2	1	1	3	10	4	3	10	9	5	4	52	48	147	131	n/a
TB Infections	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Zoonotic																
Ehrlichiosis	9	5	4	0	0	4	0	0	1	4	1	28	19	42	21	10
Lyme Disease	1	0	0	2	12	1	0	0	0	1	1	18	29	39	58	38
Rabies (Animal)	5	5	0	4	1	1	0	0	3	9	0	28	11	43	25	23
Rocky Mountain Spotted Fever	5	1	1	1	3	4	0	0	0	0	0	15	8	34	14	14
Tularemia	6	0	1	2	0	2	0	0	0	0	4	15	9	26	15	11

No. of Outbreaks by Disease Agent

Disease Group	#
AGI	2
ARI	1
Giardiasis	1
Norwalk-like	2
Other	1
Scabies	4
Shigella	2

STATEWIDE TOTALS FOR JULY-SEPTEMBER 2000

Vaccine Preventable Diseases
Hib Meningitis - 7

Other Reportable Diseases
Brucellosis - 2
HUS - 1
Kawasaki Disease - 4
Listeria - 1
Malaria - 2

*Reporting Period Beginning July 2, 2000 and Ending September 30, 2000.
**Totals do not include Kansas City, St. Louis City, St. Louis County, or Springfield
***State and Federal Institutions and Unknown
n/a Data unavailable

Due to data editing, totals may change.

TEAR OUT FOR FUTURE REFERENCE

Tuberculosis Awareness Fortnight and World TB Day

For 2001, Tuberculosis (TB) Awareness Fortnight will be held from March 19–30 and during this period of time World TB Day will be recognized as usual on March 24. Activities that are planned during TB Awareness Fortnight are listed as follows:

March 19: Vic Tomlinson, Chief, Section of Vaccine-Preventable and Tuberculosis Disease Elimination, will be speaking to a group of physicians in Kennett, Missouri.

March 22: Dr. Lee Reichman, a TB expert from the Model TB Center in New Jersey, will be speaking in St. Louis at Washington University and at Barnes-Jewish-Christian Hospital. The American Lung Association (ALA) of Eastern Missouri is sponsoring this event.

March 27: Dr. Mosbah Kreimid, with the Missouri Rehabilitation Center in Mount Vernon, Missouri and Diane Edwards, R.N., with the Section of Vaccine-Preventable and Tuberculosis Disease Elimination, will be speaking to physicians in the evening at the Holiday Inn in Joplin.

March 29: The Section of Vaccine-Preventable and Tuberculosis Disease Elimination, Missouri Department of Health, will host a reception for TB Awareness Fortnight in the Department of Health's 930 building in Jefferson City, Missouri.

March 30: Vic Tomlinson will be presenting at the Grand Rounds sponsored by ALA of Western Missouri at St. Luke's Hospital and UMKC School of Medicine in Kansas City for physicians, residents and medical students.

A nursing seminar that the ALA of Eastern Missouri will sponsor is tentatively planned during the period of TB Awareness Fortnight. Details will be available soon.

If you would like additional information regarding these TB activities, please call the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 611-2912, or the American Lung Association of Eastern Missouri at (314) 645-5505 or the American Lung Association of Western Missouri at (816) 842-5242.

IMMUNIZATION VIDEOCONFERENCE

The Section of Vaccine-Preventable and Tuberculosis Disease Elimination will sponsor the following Centers for Disease Control and Prevention (CDC) live satellite broadcasts:

Epidemiology and Prevention of Vaccine-Preventable Diseases

March 15, 22, 29 and April 5, 2001 (4-day course)

This live interactive program will provide the most current information available in the constantly changing field of immunization. Session one will cover principles of vaccination, general recommendations on immunization and strategies to improve immunization coverage levels. Session two will cover diphtheria, tetanus, pertussis, rotavirus and polio. Session three will cover measles, mumps, rubella and varicella. Session four will focus on hepatitis B, *Haemophilus influenzae* type b, influenza and pneumococcal disease.

This live, interactive satellite videoconference will feature question and answer sessions in which participants can address questions to the course instructors on toll-free telephone lines. Continuing education credits for a variety of professions will be offered based on 14 hours of instruction.

For more information about the course, site locations and times, contact the immunization representative located in your district health office or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Missouri International Health Clinics - 2001

The following is a list of international health clinics in Missouri as of December 2000:

TEAR OUT FOR FUTURE REFERENCE

Boone County

Elizabeth Allemann, MD
Travelers Health Center
1200 Fay Street
Columbia, MO 65201
Ph: (573) 443-3399

Thomas R. Cheek, MD
Travel Connection
Health Information CTR
2300 Bernadette Dr
Columbia, MO 65203
Ph: (573) 882-4590

University of Missouri
Student Health Center
South 6th
Columbia, MO 65211
Ph: (573) 882-4661
Attn: Jackie
University of Missouri-Columbia
students only by appointment

Buchanan County

Shawn Griffin, MD
Heartland Travel Clinic
802 N Riverside Rd, Ste 100
St. Joseph, MO 64507-9794
Ph: (816) 271-1334

Butler County

Kirby Turner, MD
Kneibert Clinic
686 Lester, P.O. Box 220
Poplar Bluff, MO 63902-0220
Ph: (573) 686-2411

Clay County

Clay County Health Department
1940 Highway 152
Liberty, MO 64068
Ph: (816) 781-1601
Wed by appointment

Cole County

Lorenzo D. McKnelly, DO
Mid-Missouri Medical Consultants
1111 Madison St
Jefferson City, MO 65101-2785
Ph: (573) 635-7651

Mark D. Winton, MD
Donald P. Miller, MD
Internal Medicine, Inc.
Jefferson City Medical Group
1241 W Stadium Blvd, Div 2200
Jefferson City, MO 65109
Ph: (573) 635-5264

Greene County

Stephen D. Christiansen, MD
Ozark Medical-Surgical
Associates, Ltd.
1900 South National, Suite 2800
Springfield, MO 65804
Ph: (417) 881-8819

Don S. Overend, MD
Lisa Ovens, MD
Jim Waterfield, MD
Richard T. Honderick, DO
Smith-Glynn-Callaway Clinic
3231 South National
Springfield, MO 65807-7396
Ph: (417/) 883-7422
Mon–Fri 8–5pm/Sat 8–12noon

Springfield-Greene County
Health Center
227 East Chestnut
Springfield, MO 65802
Ph: (417) 864-1686
By appointment only

Harrison County

Hansa N. Patel, MD
Natu B. Patel, MD
Bethany Medical Clinic
Box 506, South 69 Highway
Bethany, MO 64424
Ph: (816) 425-3154

Jackson County

Joseph H. Brewer, MD, FACP
Robert E. Neihart, M.D.
Paul M. Jost, M.D.
Plaza Internal Medicine
Infectious Disease, PC
4620 JC Nichols Parkway, Ste 415
Kansas City, MO 64112
Ph: (816) 531-1550

Allen J. Parmet, MD, MPH
Midwest Occupational Medicine
Union Hill Commons
3037 Main, Ste 201
Kansas City, MO 64108
Ph: (816) 561-3480

Joseph F. Waeckerle, MD
Albers Medical Inc.
440 Broadway, Ste 116
Kansas City MO 64111
Ph: (816) 931-0100

Jasper County

Dennis Estep, DO, MPH,MS, FACOEM
Gary Brandon, DO, MPH,FACMP
Freeman Occumed
3201 McClelland Blvd
Joplin MO 64804
Ph: (417) 626-3047

Joplin City Health Department
513 Kentucky Avenue
Joplin, MO 64801
Ph: (417) 623-6122
Thurs, 10 am by appointment

Jefferson County

John H. Krickbaum, MD
Hillsboro Medical Services
10661 Highway 21
Hillsboro, MO 63050
Ph: (636) 789-5809/5936

Lincoln County

Asif Akhtar, MD
Troy Surgical Clinic
900 East Cherry St.
Troy, MO 63379
Ph: (636) 528-8585

St. Louis City

Vernon Balster, MD
BarnesCare
909 N 14th St (Downtown)
St. Louis, MO 63106
Ph: (314) 331-3000

James Price, MD
Family Medicine Program
6125 Clayton Avenue, Ste 222
St. Louis, MO 63139
Ph: (314) 768-3204

Steven Cummings, MD
Employee Health
at St. Louis University
1310 South Grand
St. Louis, MO 63104
Ph: (314) 268-5499

Victoria Fraser, MD
Washington University
School of Medicine
660 S Euclid, Box 8051
St. Louis, MO 63110
Attn: Ruth/Lori
Ph: (314) 362-9098

Ernesto Lam, MD
Concentra Medical Center
8340 N Broadway
St. Louis, MO 63147
Ph: (314) 385-9563

Anne Nicolazzi, MD
Concentra Medical Center
1617 S Third St
St. Louis, MO 63101
Ph: (314) 421-2557

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Chesterfield, MO 63017
Ph: (636) 537-0377

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Monsanta World Head Quarters
A Medical Clinic
800 N Lindbergh Blvd
St. Louis, MO 63167
Ph: (314) 694-2194

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Northwest Infectious Disease
Services, LLC.
DePaul Professional Office Building
12277 DePaul Drive, Ste 201
Bridgeton, MO 63044-2585
Ph: (314) 344-7070

Shelby Kopp, M.D.
Concentra Medical Center
83 Progress Parkway
Maryland Heights, MO 63043
Ph: (314) 436-9440

Paul B. L'Ecuyer, MD
Barnes West Medical Consultants
Professional Building #2, Ste 200
10 Barnes West Drive
St. Louis, MO 63141
Ph: (314) 434-8828

Farrin A. Manian, MD, MPH
David A. Janssen, MD
Adult Infectious Diseases
621 S New Ballas Road, Ste 3002-B
St. Louis, MO 63141
Ph: (314) 569-6171

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Mycobacterium tuberculosis: Documenting Acquired Drug Resistance in Missouri

Thomas H. Lindner
Missouri State Tuberculosis Laboratory

Introduction

Individuals who are diagnosed with pulmonary tuberculosis (TB) and who are receiving proper therapy are expected to convert to sputum smear and culture negativity in a predictable amount of time, the sooner the better. What constitutes a predictable time is a cause for confusion, judging by inquiries made to the Missouri State Tuberculosis Laboratory (MSTBL) in Mt. Vernon. Some health care providers feel their patients should convert to negative in two weeks, while others suggest a two-month standard. Most providers are surprised to learn that a significant number of TB patients don't become culture negative until well into their fourth month of chemotherapy. Very few, if any, convert in two weeks.

Since sputum conversion is used as a yardstick to measure response to therapy, MSTBL frequently receives requests to repeat anti-tubercular drug testing. The scenario goes like this: the caller states that the patient has been on therapy for six weeks, is still smear and culture positive, so he must be resistant to one or more drugs. Could we please repeat the susceptibility? It is implied that the patient has developed acquired drug resistance, since he hasn't responded as quickly as anticipated.

Acquired drug resistance is defined as drug resistance that is known to be a result of chemotherapy. That is, an organism (*Mycobacterium tuberculosis*), known to be pan sensitive, develops resistance to one or more drugs during the course of chemotherapy. It is widely agreed that this occurs either because the patient was treated with an inadequate regimen or because the patient did not take the prescribed regimen appropriately. This acquired drug resistance is determined (or found out) only by performing susceptibility tests on specimens still culture positive after some period of treatment.

In North America, regardless of the method of testing, a strain of *M. tuberculosis* should be considered resistant if one percent or more of the bacterial population is resistant to a designated concentration of a drug. This designated concentration is referred to by the Centers for Disease Control and Prevention (CDC) as the "critical concentration" for use in *in vitro* laboratory testing.

There exists no single hard and fast rule by which one determines when to repeat the drug tests while a patient is on treatment. However, it is important to test isolates obtained during the course of therapy under the following circumstances:

1. When the patient does not respond clinically within a few months.
2. When sputum does not convert to smear negative within two or three months of treatment or bacterial counts on solid media show no improvement.
3. When cultures do not become negative within four to six months.
4. When sputum shows a consistent increase in smear count after an initial decrease.
5. In cases of clinical relapse.

MSTBL has always attempted to review the culture history for those patients on whom we receive repeated specimens throughout their treatment course. By reflex testing, we repeat the drug susceptibility when one of the above criteria is met, but at no time sooner than two months into therapy. By two months, we denote the differential of the dates of acquisition of the respective positive specimens.

Results

What is the rate of acquired drug resistance in Missouri, and how important is this rate? MSTBL maintains all its records in electronic form. These records are stored in Visual dBase 7.5 in relational database structure, and are inclusive from 1988 to present.

From 1988 to August 2000, drug susceptibilities were performed on 2,777 individual patients with *M. tuberculosis*. Repeated susceptibilities (two or more) were completed on 221 patients. Using the definition of acquired drug resistance previously stated, 15 cases were found that met the definition. A change in susceptibility pattern, usually from pan sensitive to single drug resistance, was observed for these patients. It should be noted that two patients had initial drug resistance and lost additional drugs during treatment. Laboratory records do not include the regimen of therapy that patients were receiving, but this means that these patients developed (acquired) drug resistance during chemotherapy after initially being susceptible to a drug. "During chemotherapy" is used rather loosely, since the patients' levels of compliance (adherence) to the drug regimen is unknown.

Based on these data, the acquired drug resistance rate for Missouri for this period is 0.5 percent (15/2777=0.005). Isoniazid was the most likely drug to shift patterns, with 12 (0.4%) isolates becoming resistant during treatment after being shown sensitive initially. Rifampin followed with eight (0.3%) isolates. As a note of concern, seven (0.3%) patients developed acquired multi-drug resistance. This number accounts for almost half the cases in this 13-year dataset. These patients reflect a real failure in the system to successfully treat TB upon initial presentation.

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Table 1. Rate of Acquired Drug Resistance to Tubeculosis Medications Used on Tuberculosis Patients, Missouri, 1988–2000.

Drug	No. of Patients*	Rate of Acquired Resistance
Streptomycin	3	0.1%
Isoniazid	12	0.4%
Rifampin	8	0.3%
Ethambutol	1	<0.1%
Pyrazinamide	1	<0.1%
Multi-Drug Resistant	7	0.3%
Total Patients	**15**	**0.5%**

*Since some patients became resistant to more than one drug, the totals for the five primary drugs do not equal the 15 patients.

Table 2. Patterns and Years of Development of Acquired Drug Resistance Among 15 Tuberculosis Patients, Missouri, 1988–2000.

Patient	Initial Pattern	Resistance Development
1	1992 Pan sensitive	93 INH 95 SM INH RIF EMB
2	91 Pan	91 INH
3	89 Pan	89 INH
4	95 SM	96 SM INH RIF
5	91 Pan	91 INH RIF 92 SM INH RIF
6	94 Pan	95 SM INH RIF
7	92 Pan	93 INH
8	88 EMB	88 RIF EMB
9	98 Pan	00 INH
10	89 Pan	90 INH
11	90 Pan	91 INH
12	92 Pan	93 INH RIF
13	92 Pan	92 INH
14	89 Pan	90 INH RIF
15	97 Pan	98 PZA

(continued from page 11)

Table 1 shows data for the primary anti-tubercular drugs.

The 221 patients for whom a second susceptibility test was performed represent eight percent of all susceptibility testing. These patients met one or more of the aforementioned criteria, and specimens were retested because of laboratory reflex or discussion with the attending physician.

Widespread use of directly observed therapy (DOT) began in Missouri in 1995. In that year 58.4 percent of TB patients were treated by DOT; this figure improved to 74.1 percent in 1996. If we review the patients in this dataset who developed acquired drug resistance, we find that 12 (80%) of the cases developed resistance between 1988–1995. (See Table 2.) **Only three episodes of acquired drug resistance have occurred in Missouri since widespread DOT has been practiced.** This demonstrates the advantage of DOT and the reason that it was adopted as the standard of care in Missouri.

Conclusions

Ideally, no case of acquired resistance should occur. If TB patients are diagnosed promptly, started on the four-drug regimen, given DOT with proper follow-up for six months, and are compliant with their course of therapy, then acquired drug resistance should never develop. Each case represents a failed opportunity to eradicate a pan-sensitive organism and to successfully treat the patient.

The good news is that these data suggest that very few TB patients in Missouri are developing drug-resistant strains during therapy. In reviewing almost 13 years of data, only 15 cases of acquired drug resistance could be found. A rate of 0.5 percent represents one case per two hundred cases of tuberculosis. Since Missouri experiences approximately 200 new cases of TB each year, we can expect to encounter one new case of acquired drug resistance each year.

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Early Syphilis in Men Who Have Sex With Men, Missouri, 1994–1999

Cynthia Illy
Kurt Kleier
Office of Surveillance

Robert Hamm, M.D., M.P.H.
Office of Epidemiology

Introduction

Syphilis continues to be a disease of particular concern because of the severe damage it can cause in infected fetuses and congenitally infected infants, and in persons with neurosyphilis and with late stage manifestations that may involve multiple organ systems. In addition, studies have indicated at least a twofold to fivefold increased risk for HIV infection among persons who have genital ulcers such as those caused by syphilis.[1] A major outbreak of syphilis took place in the St. Louis area in the early 1990s[2], and a smaller outbreak occurred in the extreme southeastern part of the state (the Bootheel) in 1997–1998.[3] The Missouri Department of Health (MDOH) and the St. Louis City Health Department are currently collaborating with the Centers for Disease Control and Prevention (CDC) in a program (which is being carried out nationwide) to eliminate syphilis.[4]

During the period from the late 1970s through the early 1980s, men who have sex with men (MSM) accounted for up to 50 percent of new syphilis cases in many urban areas in the United States.[5] However, in the years that followed, syphilis incidence in MSM declined, apparently related to an overall decrease in the level of risky sexual behavior among many gay men that resulted from concern regarding human immunodeficiency virus (HIV) infection. More recently, there have been reports of increased numbers of cases of syphilis or gonorrhea among MSM in different locations in the United States, associated with increases in high-risk sexual behaviors.[6,7,8] To determine whether a similar increase in syphilis cases among MSM might be occurring in Missouri, MDOH's Office of Surveillance (OoS), in collaboration with the Office of Epidemiology (OOE), undertook a study of all male early syphilis cases reported to MDOH from 1994–1999.

Methods

In Missouri, each reported case of syphilis is interviewed by a specially trained public health outreach worker known as a counseling and intervention specialist (CIS) or a disease intervention specialist (DIS). The CIS or DIS records information from the interview on a standard CDC STD interview record form (CDC-73.126). This record contains demographic and clinical information on the patient, as well as information on his/her sexual partner(s). For this study, interview records were obtained for **early syphilis** (primary, secondary, and early latent syphilis) cases in **males** reported to MDOH from 1994–1999. The information retrieved from these records, supplemented by syphilis surveillance data that had been reported to OoS, was then entered into a Microsoft Access database and analyzed using Microsoft Excel.

Each case was placed into one of two categories:

a) "no history of male sexual contact" (if there was no evidence of sexual contact with another male), or
b) "MSM" (if there was evidence of sexual contact with another male, regardless of whether the individual also had a female sexual partner).

More specifically, for a male patient to be classified as MSM, one of the following two criteria must have been met:

1) the patient answered "yes" to the question "Since 1978, have you had sex with a male?," or
2) named a male sex partner during the interview with the CIS or DIS.

A subcategory was established under MSM for cases that were bisexual. To be classified as bisexual, the individual must have met the criteria for MSM and then either have answered "yes" to the question "Since 1978, have you had sex with a female?," or named a female sex partner during the interview.

Results

From 1994–1999, there were a total of 4,053 early syphilis cases reported in Missouri; 2,026 (50.0%) of these cases were male. African-American men comprised 1,813 (89.5%) of the 2,026 male cases, white men accounted for 182 (9.0%) cases, and the remaining 31 (1.5%) male cases were of other/unknown race. The largest numbers of male early syphilis cases were in 20–29 year olds, 656 (32.4%), followed by 30–39 year olds with 629 (31.0%) cases, and 40–49 year olds with 349 (17.2%) cases. Men 50 years of age and older accounted for 215 (10.6%) cases, and 177 (8.7%) cases were in young men under the age of 20. A majority of the male cases, 1,160 (57.3%), were from St. Louis City. St. Louis County, Kansas City and the outstate area had 484 (23.9%), 125 (6.2%), and 257 (12.7%) cases, respectively.

Of the 2,026 male early syphilis cases reported from 1994–1999, interview records were located for 1,931 (95.3%). Of these 1,931 cases, 140 (7.3%) indicated they had engaged in sexual contact with another male, and were classified as MSM. African-Americans and whites were the only racial groups represented in the early syphilis MSM cases; 109 (77.9%) of the 140 MSM cases were in African-American men and 31 (22.1%) were in white men. The 30–39 year age group had the largest number of MSM cases, 60 (42.9%), followed by 20–29 year olds with 51 (36.4%) cases, and 40–49 year olds with 15 (10.7%) cases. Nine (6.4%) MSM cases were under the age of

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20, and 5 (3.6%) cases were in men 50 years of age and older. St. Louis City had the largest number of MSM cases with 67 (47.9%), followed by St. Louis County with 31 (22.1%), Kansas City with 26 (18.6%), and the outstate area with 16 (11.4%). (See Table 1.)

Of the 140 MSM early syphilis cases, 51 (36.4%) indicated they had also had sexual contact with a female, and were consequently classified as bisexual. African-Americans comprised 45 (88.2%) of the 51 bisexual cases, and whites comprised the 6 (11.8%) remaining cases. Twenty-one (41.2%) of the bisexual cases were 30–39 year of age, 20 (39.2%) cases were 20–29 years old, 5 (9.8%) cases were 40–49 years old, 3 (5.9%) cases were 50 years of age or older, and 2 (3.9%) cases were under the age of 20. Of the 51 bisexual cases, 28 (54.9%) were from St. Louis City, 11 (21.6%) from St. Louis County, 6 (11.8%) from Kansas City, and 6 (11.8%) from the outstate area. (See Table 2.)

Total numbers of reported cases of early syphilis, as well as reported early syphilis cases in males (and females), consistently declined over the six-year period from 1994–1999, from 1,693 total cases (864 male cases) reported in 1994 to 195 total cases (91 male cases) reported in 1999. Among male early syphilis cases, generally consistent declines were seen during this period in both African American and white men. (See Table 3.)

Early syphilis cases in MSM (including cases in bisexuals) also showed a generally constant decline during this period from 50 total MSM cases (including 19 cases in bisexuals) in 1994 to 6 cases (including 2 cases in bisexuals) in 1999. Declines in reported MSM cases were seen in both African American and white men. (See Table 3.)

Table 1. Reported Early Syphilis Cases in Males by History of Male Sexual Contact, Race, Age Group, and Geographic Area, Missouri, 1994–1999.

	MSM*		No History of Male Sexual Contact		Total Males	
Race						
African Americans	109	77.9%	1,624	90.7%	1,733	89.7%
Whites	31	22.1%	141	7.9%	172	8.9%
Other/Unknown	0	0.0%	26	1.5%	26	1.3%
Age Group						
<20	9	6.4%	159	8.9%	168	8.7%
20–29	51	36.4%	583	32.6%	633	32.8%
30–39	60	42.9%	538	30.0%	598	31.0%
40–49	15	10.7%	312	17.4%	327	16.9%
≥50	5	3.6%	199	11.1%	204	10.6%
Area						
St. Louis City	67	47.9%	1,033	57.7%	1,100	57.0%
St. Louis County	31	22.1%	418	23.3%	449	23.3%
Kansas City	26	18.6%	99	5.5%	125	6.5%
Outstate	16	11.4%	241	13.5%	257	13.3%
Total	**140**	**100.0%**	**1,791**	**100.0%**	**1,931**	**100.0%**
Row Percent		**7.3%**		**92.7%**		**100.0%**

*Men who have sex with men

Table 2. Reported Early Syphilis Cases in Men Who Have Sex With Men by Bisexual Status, Race, Age Group, and Geographic Area, Missouri, 1994–1999.

	Not Bisexual		Bisexual		Total MSM*	
Race						
African Americans	64	71.9%	45	88.2%	109	77.9%
Whites	25	28.1%	6	11.8%	31	22.1%
Other/Unknown	0	0.0%	0	0.0%	0	0.0%
Age Group						
<20	7	7.9%	2	3.9%	9	6.4%
20–29	32	36.0%	20	39.2%	51	36.4%
30–39	39	43.8%	21	41.2%	60	42.9%
40–49	10	11.2%	5	9.8%	15	10.7%
≥50	3	3.4%	3	5.9%	5	3.6%
Area						
St. Louis City	39	43.8%	28	54.9%	67	47.9%
St. Louis County	20	22.5%	11	21.6%	31	22.1%
Kansas City	20	22.5%	6	11.8%	26	18.6%
Outstate	10	11.2%	6	11.8%	16	11.4%
Total	**89**	**100.0%**	**51**	**100.0%**	**140**	**100.0%**
Row Percent		**63.6%**		**36.4%**		**100.0%**

*Men who have sex with men

Discussion

From 1994–1999, the annual number of early syphilis cases reported to MDOH consistently declined; declines were seen in both male and female cases, and in both African Americans and whites. In addition, the numbers of reported cases of early syphilis in MSM in Missouri did not show any noticeable increases during this period. Instead,

Table 3. Reported Total, Male, and MSM* Early Syphilis Cases by Year of Report, Missouri, 1994–1999.

	1994	1995	1996	1997	1998	1999	Total
All Cases							
African Americans	1,525	999	425	276	216	148	3,589
Whites	159	89	38	37	39	30	392
Other/Unknown	10	3	17	7	19	17	73
Total	**1,693**	**1,091**	**480**	**320**	**274**	**195**	**4,053**
Males							
African Americans	779	493	218	137	114	72	1,813
Whites	82	39	17	14	19	11	182
Other/Unknown	3	2	6	4	8	8	31
Total	**864**	**534**	**241**	**155**	**141**	**91**	**2,026**
MSM*							
African Americans	42	31	15	8	8	5	109
Whites	8	9	5	3	5	1	31
Other/Unknown	0	0	0	0	0	0	0
Total	**50**	**40**	**20**	**11**	**13**	**6**	**140**

*Men who have sex with men

consistent with the overall statewide trend in early syphilis cases, cases in MSM showed generally steady yearly declines.

Although these findings do not provide any evidence of an increase in syphilis incidence in MSM in Missouri, there are reasons why continued monitoring of this situation needs to occur. First, the actual numbers of male early syphilis cases who are MSM could be somewhat higher than is indicated by a review of STD interview records, since some patients may have been hesitant to reveal certain facts regarding their sexual behaviors and/or to name all of their sexual partners. Second, even though the numbers of reported early syphilis cases in Missouri MSM appear to have been declining, this does not necessarily mean that levels of risky sexual behaviors are also declining. It is possible that levels of such behaviors might even be increasing in certain MSM populations. However, because of the apparent low prevalence of syphilis infection in these populations at the present time, this risky behavior would not be resulting in any appreciable transmission of *Treponema pallidum* (although transmission of other sexually transmitted pathogens, including HIV, could potentially be taking place). It should be noted that behavioral survey findings have indicated the continuing presence of behaviors associated with STD/HIV transmission—such as multiple sexual partners, inconsistent condom use, and non-injectable drug use—in certain at-risk MSM populations in Missouri.[9] However, whether these behaviors are becoming more prevalent is not known. OoS hopes, contingent on available future resources, to conduct further behavioral studies of Missouri MSM to help address this important question.

While there is no current evidence of an increase in syphilis infections among MSM in Missouri, the recent reports of outbreaks of syphilis and other bacterial STDs among MSM in other areas of the country[6,7,8], along with studies documenting an increase in risky sexual behaviors in MSM in some locations[7,8], indicate that maintaining low levels of STDs in this population will require ongoing effort. OoS will continue to monitor the occurrence of early syphilis cases in MSM in Missouri through examination of STD interview records from all male cases.

STD surveillance and clinic staff in St. Louis City and Kansas City provided vital support in accessing interview records for patients from these locations.

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LATE BREAKERS

☞ The U.S. Public Health Service recently released updated guidelines for use of antiretroviral drugs in HIV-positive pregnant women to reduce the risk of perinatal HIV transmission. These guidelines are available online at: **http://hivatis.org/trtgdlns.html#Perinatal**. In addition, you can have a PDF file sent directly to your email address, or you can request a single printed copy be mailed to you, by contacting the HIV/AIDS Treatment Information Service (ATIS) at 1-800-448-0440, or at **http://hivatis.org/request.html?list**.

In addition to the guidelines for HIV-infected pregnant women, other current HIV/AIDS treatment guidelines are available at the HIV/AIDS Treatment Information Service (ATIS) web site: **http://hivatis.org/trtgdlns.html**.

☞ "Diagnosis and Management of Foodborne Illnesses: A Primer for Physicians" is available online at: **http://www.ama-assn.org/ama/pub/category/3629.html**. This primer is produced collaboratively by the American Medical Association, the Centers for Disease Control and Prevention, and other federal agencies. It is intended to provide health professionals with current and accurate information for the diagnosis, treatment, and reporting of foodborne illnesses. In addition, it provides health care professionals with patient education materials on prevention of foodborne illness, and it also offers 3.0 hours of Category I Continuing Medical Education or Continuing Education Units.

An additional web site containing useful information on foodborne illnesses and their prevention is "www.FoodSafety.gov: Gateway to Government Food Safety Information." The web site address is: **http://www.foodsafety.gov:/**.

☞ Missouri's Family Care Safety Registry was established by law to protect children and the elderly in this state and to promote family and community safety by providing background information on potential caregivers. Beginning in January 2001, families and employers can call the registry's toll-free telephone line to request background information on registered child-care and elder-care workers or to request licensure status information on licensed child-care and elder-care providers. Information is provided at no cost. For further information, contact the Family Care Safety Registry toll free at (886) 422-6872, or visit their web site at **http://www.health.state.mo.us/FCSR**.